



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/051,962	01/16/2002	Craig T. Salling	TI-32535	1555

23494 7590 06/11/2003

TEXAS INSTRUMENTS INCORPORATED  
P O BOX 655474, M/S 3999  
DALLAS, TX 75265

EXAMINER

POMPEY, RON EVERETT

ART UNIT	PAPER NUMBER
----------	--------------

2812

DATE MAILED: 06/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/051,962

Applicant(s)

SALLING ET AL.

Examiner

Ron E Pompey

Art Unit

2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 8-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 - 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Ito et al. (US 5,851,864).

Ito discloses the limitations of:

A well of opposite conductivity type (360, fig. 3) surrounding said source and drain (1560, fig. 15), extending from said surface deep into said semiconductor material of said first conductivity type;

A semiconductor region (1860, fig. 18) within said semiconductor material of said first conductivity type surrounded by said well, said semiconductor region having a resistivity higher than the remainder of said semiconductor material; and

A layer of opposite conductivity type (360, fig. 3) buried in said semiconductor region; wherein said layer extends laterally to said wells, thereby electrically isolating the near-surface portion of said semiconductor region from the remainder of said semiconductor material;

Said layer extending vertically deeper from said surface than said electrical isolation region (610 or 620, fig. 6), thereby enabling a separate contact

Art Unit: 2812

to said electrically isolated near-surface portion of said semiconductor region  
(col. 5, ln. 12 – col. 12, ln. 65);

Wherein said semiconductor of first conductivity type is made of P-type silicon in the resistivity range from about 1 to 50Ω-cm and said source, drain, wells and buried layer are made of N-type silicon (col. 3, lns. 42-45).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taguchi et al. (US 4,994,888) in further view of Ito et al. (US 5,851,864).

Taguchi discloses the limitations of:

A well of opposite conductivity type (9, fig. 1D) surrounding said source and drain (17, fig. 1G), extending from said surface deep into said semiconductor material of said first conductivity type (4, fig. 1A);

A layer of opposite conductivity type (2, fig. 1A) buried in said semiconductor region; wherein said layer extends laterally to said wells, thereby electrically isolating the near-surface portion of said semiconductor region from the remainder of said semiconductor material;

Art Unit: 2812

Said layer extending vertically deeper from said surface than said electrical isolation region (10, fig. 1D), thereby enabling a separate contact to said electrically isolated near-surface portion of said semiconductor region;

Wherein said semiconductor of first conductivity type is made of P-type or N-type silicon in the resistivity range from about 1 to 50 $\Omega$ -cm and said source, drain, wells and buried layer are made of N-type or P-type silicon, respectively to P or N – type first conductivity; and

Wherein said semiconductor of first conductivity type is a semiconductor epitaxial layer (col. 3, ln. 12 – col. 5, ln. 63).

Taguchi discloses the limitations of the claimed invention except the limitations disclosed by Ito below;

A semiconductor region (1860, fig. 18) within said semiconductor material of said first conductivity type surrounded by said well, said semiconductor region having a resistivity higher than the remainder of said semiconductor material.

Therefore one of ordinary skill in the art would Combine Taguchi with Ito so that the higher resistivity area will provide a contact region for the device.

### ***Claim Objections***

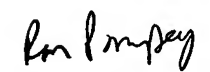
5. Claim1 is objected to because of the following informalities: the states "said layer extending laterally to said wells". However, the claim never states forming plural wells. Appropriate correction is required.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ron E Pompey whose telephone number is (703) 305-3016. The examiner can normally be reached on flex schedule.

Art Unit: 2812

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on (703) 308-3325. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

  
Ron Pompey  
Art Unit: 2812  
May 28, 2003

  
John F. Niebling  
Supervisory Patent Examiner  
Technology Center 2800